

List of Current Claims

Claims 1-25 (Cancelled)

26. (New) A sorting device for sorting products in a product stream, said device comprising:

- an inspection unit arranged to inspect the products on their acceptability, the inspection unit including at least two light sources providing light arranged to be guided by a waveguide system including a rotating polygon arranged and positioned to align and reflect light from said light sources onto the products to scan the products as they are transported past the inspection device;

- a transport system configured to transport the products in the product stream towards the inspection unit; and

- a rejection unit arranged to remove unacceptable products from the product stream.

27. (New) The sorting device according to claim 26, further comprising:

- a plurality of coupling-in optical elements arranged to focus the light generated from said at least two sources into optical waveguides;

- a combining unit arranged to combine the light from the optical waveguides into one light beam, said light beam including at least one waveguide composed of the light generated from the at least two light sources; and

- focusing optics arranged to focus said light beam onto the products in the product stream.

28. (New) The sorting device according to claim 27, wherein the light sources are laser sources.

29. (New) The sorting device according to claim 27, wherein the light sources are semiconductor laser sources.

30. (New) The sorting device according to claim 29, wherein the semiconductor laser sources are cooled by means of a Peltier element.

31. (New) The sorting device according to claim 27, wherein the light sources are solid matter laser sources.

32. (New) The sorting device according to claim 25, wherein the light sources radiate light of a different wavelength.

33. (New) The sorting device according to claim 27, wherein the coupling-in optical elements are provided with connectors.

34. (New) The sorting device according to claim 27, wherein the combining unit includes dichroic elements.

35. (New) The sorting device according to claim 27, wherein the combining unit includes fused optical wavelength technology.

36. (New) A sorting device for sorting products in a product stream, said device comprising:

an inspection unit arranged to inspect the products on their acceptability on the basis of a selection based on electromagnetic radiation, the inspection unit including a waveguide system disposed at a detection side thereof and configured to receive the electromagnetic radiation reflected, transmitted, emitted or transformed

by the products in the product flow, the waveguide system including a rotating polygon arranged and positioned to align and reflect electromagnetic radiation onto the products to scan the products as they are transported past the inspection device;

a transport system configured to transport the products in the product stream towards the inspection unit; and

a rejection unit arranged to remove unacceptable products from the product flow.

37. (New) The sorting device according to claim 36, wherein the waveguide system comprises a bundle of optical waveguides.

38. (New) The sorting device according to claim 37, wherein the extremities of the bundle of optical waveguides are located in an image plane of a lens system such that an image formed by the products is projected onto at least one of said extremities, or onto an intermediate element arranged to transmit the image onto the bundle.

39. (New) The sorting device according to claim 38, wherein the bundle of waveguides is divided into separate parts corresponding to well-defined portions of the formed image.

40. (New) The sorting device according to claim 39, wherein the bundle of optical waveguides is divided into at least one substantially concentric bundle.

41. (New) The sorting device according to claim 39, wherein the separate parts are arranged in a configuration separating each part by avoiding cross-coupling therebetween.

42. (New) The sorting device according to claim 39, wherein the bundles forming said parts are led separately to detectors and/or optical splitting elements.

43. (New) The sorting device according to claim 39, wherein several of said bundles comprise different parts arranged for use after the image is divided into two or more images by optical splitting elements.

44. (New) The sorting device according to claim 43, wherein the optical splitting elements have outgoing waveguides.

45. (New) the sorting device according to claim 36, wherein the optical waveguides comprise fibers with a large core diameter/mantle diameter ratio and/or a high numerical aperture.

46. (New) The sorting device according to claim 25, wherein the inspection unit at a sending side thereof is provided with waveguide technology.

47. (New) A sorting device for sorting products in a product stream, said device comprising:

an inspection unit arranged to inspect the products on their acceptability, the inspection unit is provided with a bundle of waveguides and/or is provided with at least one waveguide, the bundle for a sending part and a detection part of the inspection unit is common and/or the one or more waveguides for the sending part and the detection part of the inspection unit are common, the inspection unit including a rotating polygon arranged and positioned to align and reflect electromagnetic radiation onto the products to scan the products as they are transported past the inspection device;

a transport system configured to transport the products in a product stream towards the inspection unit; and

a rejection unit arranged to remove unacceptable products out of the product stream.

48. (New) The sorting device according to claim 47, further comprising a lens system arranged to focus emitted light onto the products and focus the light received thereby onto the waveguides.

49. (New) The sorting device according to claim 47, wherein at least two additional waveguide systems are provided on the sending side and/or the detection side of the inspection unit.